

WHAT IS CLAIMED IS:

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- 1 1. A piezoelectric array for detecting acoustic seismic data comprising:
2 a piezoelectric film placed on a surface of a relatively incompressible
3 substrate; and
4 an area of relatively compressible substrate formed in the surface of the
5 incompressible substrate forming an area of increased sensitivity in the
6 piezoelectric film to impinging acoustic pressure waves.
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- 1 2. The piezoelectric array of claim 1 further comprising:
2 an array of areas of relatively compressible substrate formed in the surface of
3 the relatively incompressible substrate forming an array of areas of increased
4 sensitivity in the piezoelectric film to impinging acoustic pressure waves.

- 1 3. The piezoelectric array of claim 2, further comprising:
2 a two-dimensional array of areas of relatively compressible substrate formed
3 in the surface of the relatively incompressible substrate forming a two-
4 dimensional array of areas of increased sensitivity in the piezoelectric film to
5 impinging acoustic pressure waves.
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4. The piezoelectric array of claim 3, further comprising:

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the two-dimensional array of areas of increased sensitivity are formed into a three-dimensional shape to form a three-dimensional array of areas of increased sensitivity in the piezoelectric film to impinging acoustic pressure waves.

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5. The piezoelectric array of claim 2 wherein the size and location of the areas of increased sensitivity are varied to shape the beam pattern of the piezoelectric array.

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6. The piezoelectric array of claim 2 wherein the size and location of the areas of increased sensitivity are varied to shape the spectral response of the piezoelectric array.

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7. The piezoelectric array of claim 2 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively incompressible substrate are varied to shape the beam pattern of the piezoelectric array.

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8. The piezoelectric array of claim 2 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively

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incompressible substrate are varied to determine the spectral response of the piezoelectric array.

9. The piezoelectric array of claim 3 wherein the shape of the array is formed to determine the beam pattern of the array.

10. The piezoelectric array of claim 3 wherein the shape of the array is formed to determine the spectral response of the array.

11. The piezoelectric array of claim 2 wherein the piezoelectric response can be monitored with a single set of leads, one positive and one negative.

12. The piezoelectric array of claim 3 wherein the size and location of the areas of increased sensitivity are varied to shape the beam pattern of the piezoelectric array.

13. The piezoelectric array of claim 3 wherein the size and location of the areas of increased sensitivity are varied to shape the spectral response of the piezoelectric array.

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14. The piezoelectric array of claim 3 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively incompressible substrate are varied to shape the beam pattern of the piezoelectric array.

15. The piezoelectric array of claim 3 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively incompressible substrate are varied to determine the spectral response of the piezoelectric array.

16. The piezoelectric array of claim 4 wherein the shape of the array is formed to determine the beam pattern of the array.

17. The piezoelectric array of claim 4 wherein the shape of the array is formed to determine the spectral response of the array.

18. The piezoelectric array of claim 4 wherein the piezoelectric response can be monitored with a single set of leads, one positive and one negative.

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19. The piezoelectric array of claim 4 wherein the size and location of the areas of increased sensitivity are varied to shape the beam pattern of the piezoelectric array.

20. The piezoelectric array of claim 4 wherein the size and location of the areas of increased sensitivity are varied to shape the spectral response of the piezoelectric array.

21. The piezoelectric array of claim 4 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively incompressible substrate are varied to shape the beam pattern of the piezoelectric array.

22. The piezoelectric array of claim 4 wherein the ratio of the total surface area of the areas of increased sensitivity to the total surface area of the relatively incompressible substrate are varied to determine the spectral response of the piezoelectric array.

23. The piezoelectric array of claim 4 wherein the piezoelectric response can be monitored with a single set of leads, one positive and one negative.